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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/597,610

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Eric Le Gall

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SUITE 210
PONTIAC, MI 48342

EXAMINER

THOMPSON, CAMIE S

ART UNIT

PAPER NUMBER

1786

NOTIFICATION DATE

DELIVERY MODE

11/17/2011

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 10/597,610	Applicant(s) LE GALL ET AL.	
	Examiner CAMIE THOMPSON	Art Unit 1786	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on Amendment filed 8/19/2011.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on ____; the restriction requirement and election have been incorporated into this action.
- 4) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 5) ☒ Claim(s) 32-36,39,40,42-48 and 52-57 is/are pending in the application.
- 5a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 6) ☐ Claim(s) ____ is/are allowed.
- 7) ☒ Claim(s) 32-36,39,40,42-48 and 52-56 is/are rejected.
- 8) ☒ Claim(s) 57 is/are objected to.
- 9) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 10) ☐ The specification is objected to by the Examiner.
- 11) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 12) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

1. Applicant's amendment and accompanying remarks filed August 19, 2011 are acknowledged.
2. Examiner acknowledges amended claims 32, 34-36 and 46.
3. Examiner acknowledges newly added claims 54-57.
4. Examiner has given reconsideration to the rejection of the claims under 35 U.S.C. 103(a) as being unpatentable over FR2356509 in view of JP 2963070.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 34, 39, 47 and 52-55 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Regarding claim 34, the phrase "such as" renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d). Claim 39 is not commensurate in scope with claim 32 from which it depends. Claim 39 recites that the surface layers are concentric tubes. Claim 32 recites that the surface layers are hollow tubes. A concentric tube does not necessarily have to be hollow. Claims 52 is not commensurate in scope with claim 32, from which it depends. Claim 52 recites the surface layers are carbon fibers formed as concentric tubes. Claim 32 recites that the surface layers are hollow tubes. A concentric tube does not have to be hollow. Claim 53 is not commensurate in scope with claim 46, from which it depends. Claim 53 recites the

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surface layers are carbon fibers formed as concentric tubes. Claim 46 recites that the surface layers are hollow tubes. A concentric tube does not have to be hollow. Regarding claim 47, the phrase "such as" renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d). Regarding claim 54, the phrase "such as" renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d). Claim 56 is not commensurate in scope with claim 32, from which it depends. Claim 56 recites that the two surface layers are made of different materials. Claim 32 requires the two surface layers to be matching internal and external structures.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 32-36, 45-48 and 55-56 are rejected under 35 U.S.C. 103(a) as being unpatentable over FR2356509 in view of JP 2963070.

The French reference discloses a sandwich structure comprising a core of plastic foam wherein on both sides of the core is a surface layer that can be a paper sheet, a fiber film or fabric of glass (see abstract). Additionally, the abstract of the French reference discloses that that thickness of the core is approximate 1 to 3 mm and the thickness of the surface layer(s) is 0.2 to 0.4 mm as required by present claims 32, 34-36, 42-48 and 55. The French reference also discloses that the

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core can comprise an epoxy foam resin with a density of 0.5 to 0.8 g/cm³ as per instant claims 32-33 and 46 (see entire document). The reference also discloses that the surface layers can be a paper sheet, a metallic sheet or a resin impregnated sheet as per instant claims 32 and 46 (see entire document and figures). The French document also discloses that the outer layers can be a film of glass fibers or a glass fiber fabric. Also, the French document discloses that the two surface layers can be of different materials as per instant claim 56. The reference discloses that the sheets are impregnated, dried, superimposed and joined with the core under pressure and heating as per instant claims 50 and 51.

The French reference does not disclose the amount of epoxy resin present in the core. However, this is an optimizable feature. The French reference does disclose that the core must have increased mechanical strength. The French reference also discloses that the core can comprise epoxy resin. The amount of epoxy resin in the core affects the rigidity and strength of the structure. Discovery of optimum values of a result effective variable involves only routine skill in the art *in re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). Therefore, it would have been obvious to one of ordinary skill in the art to have epoxy resin present in the core in the amount of 15-65 % by weight in order to have a laminate structure that has increased rigidity and strength.

The French reference does not disclose that the composite has a flexural modulus as measured by ASTM D790/ISO 178 from 200 mPa to 700 mPa. The reference discloses that the composite structure is to have increased mechanical properties and strength. The flexural modulus can be optimized by optimizing the weight of the resin in the core as by applicant's admission.

Therefore, it would have been obvious to one of ordinary skill in the art to have a composite that

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has a flexural modulus as measured by ASTM D790/ISO 178 from 200 mPa to 700 mPa in order to have a structure that has increased mechanical properties.

The French reference does not disclose that the surface layers are matching internal and external structures and are hollow box sections. The Japanese reference discloses a synthetic resin composite plate comprising a core material formed of a thermosetting foamed body with upper and lower surface layers that are comprised of hollow box sections formed from fiber reinforced plastic (see abstract and drawings). A box can be tube. The hollow box sections (tubes) for the surface layers affect the strength and rigidity of the composite by preventing cracks in the surface. Therefore, it would have been obvious to one of ordinary skill in the art to have the surface layers of the French reference be hollow box sections in order to have a composite that has excellent strength and rigidity.

Regarding claim 42, which recites the composite is part of a construction building or transportation vehicle, is not given any patentable weight because of intended use. Claim 42 is drawn to the composite with the structure of at least two surface layers and a rigid epoxy foam sandwiched therebetween.

Regarding claims 43-45, the language 'configured to' is not given any patentable weight because of intended use. Claims 43-44 are drawn to the composite with the structure of at least two surface layers and a rigid epoxy foam sandwiched therebetween.

9. Claims 32, 34, 40, 42-47 and 57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sobolev, U.S. Patent Number 5,030,488 in view of JP 2963070.

Sobolev discloses a sandwich panel which comprises two (2) metal sheets with a filled reinforced resin between and bonded to the metal sheets (see abstract and column 3, lines 65-68). Example

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II and column 10, lines 28-30 of the Sobolev reference disclose that the metals sheets are aluminum as per instant claim 40 and that the resin is a rigid resin such as an epoxy resin mixture. Column 4, lines 1-6 of the reference discloses that the metal sheets each have a thickness of 0.015 inch to 0.1 inch and the overall composite has a thickness of 0.1 inch to 2 inches, which would be in the range of the epoxy resin having a thickness of at least 1.5 times the combined thickness of the surfaces layers as per instant claims 32, 46 and 55. Additionally, it is disclosed in column 4, lines 1-6 that the flexural modulus of the composite is 2.5 million psi as per instant claims 32 and 46. It is disclosed in column 4, lines 44-47 that the resin core is syntactic foam. Column 12, lines 3-10 of the reference discloses that a foaming agent is added to the resin to lower the density of the resin and that the density should be between 0.8-1.3 as per instant claim 32. Sobolev discloses that the composite is used in vehicle trailer body construction (see column 3, lines 5-11).

Regarding claim 42, which recites the composite is part of a construction building or transportation vehicle, is not given any patentable weight because of intended use. Claim 42 is drawn to the composite with the structure of at least two surface layers and a rigid epoxy foam sandwiched therebetween.

Regarding claims 43-45, the language 'configured to' is not given any patentable weight because of intended use. Claims 43-44 are drawn to the composite with the structure of at least two surface layers and a rigid epoxy foam sandwiched therebetween.

The Sobolev reference does not disclose the amount of epoxy resin present in the core.

However, this is an optimizable feature. The Sobolev reference does disclose that the core must have increased mechanical strength. The Sobolev reference also discloses that the core can

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comprise epoxy resin. The amount of epoxy resin in the core affects the rigidity and strength of the structure. Discovery of optimum values of a result effective variable involves only routine skill in the art *in re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). Therefore, it would have been obvious to one of ordinary skill in the art to have epoxy resin present in the core in the amount of 15-65 % by weight in order to have a laminate structure that has increased rigidity and strength.

The Sobolev reference does not disclose that the surface layers are matching internal and external structures and are hollow box sections. The Japanese reference discloses a synthetic resin composite plate comprising a core material formed of a thermosetting foamed body with upper and lower surface layers that are comprised of hollow box sections formed from fiber reinforced plastic (see abstract and drawings). A box can be tube. The hollow box sections (tubes) for the surface layers affect the strength and rigidity of the composite by preventing cracks in the surface. Therefore, it would have been obvious to one of ordinary skill in the art to have the surface layers of the Sobolev reference be hollow box sections in order to have a composite that has excellent strength and rigidity.

10. Claim 57 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The prior art does not provide for the epoxy resin to be embedded in the surface layers of the recited composite.

Response to Arguments

11. Applicant's arguments filed August 19, 2011 have been fully considered but they are not persuasive. Applicant argues that there has not been fact finding in demonstrating where the French reference or the Japanese reference comprise about 15% to about 65% by weight of epoxy resin wherein the resulting composite has a flexural modulus as measured by ASTM D790/ISO 178 from 200 mPa to 700 mPa; and wherein the at least two surface layers are matching internal and external structures and the at least two surfaces are tubes. According to applicant's admission, the flexural modulus can be optimized by optimizing the amount of the resin in the core of the laminate. Therefore, it would have been obvious to optimize the content of the epoxy resin to about 15% to about 65% in the laminate in order to achieve increased mechanical properties such as a flexural modulus from 200 mPa to 700 mPa.

Applicant argues that the French reference does not disclose that the two surface layers can be fibrous. The French reference discloses that the surface layers that can be a paper sheet, a fiber film or fabric of glass.

The French reference also discloses that the surface layers can be a metal sheet. Examiner has provided a translation for the French and Japanese references.

Applicant has amended the claims to recite hollow tubes. A box can have a tubular structure.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CAMIE S. THOMPSON whose telephone number is (571)272-1530. The examiner can normally be reached on Monday-Friday 8:00 am - 6:30 pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jennifer Chriss can be reached on 571-272-7783. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Camie S Thompson/
Examiner, Art Unit 1786